Name: Date:

Polynomial Factoring solution (version 654)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 - 8x + 44 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(44)}}{2(1)}$$

$$x = \frac{-(-8) \pm \sqrt{64 - 176}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{-112}}{2}$$

$$x = \frac{8 \pm \sqrt{-16 \cdot 7}}{2}$$

$$x = \frac{8 \pm 4\sqrt{7}\, i}{2}$$

$$x = 4 \pm 2\sqrt{7}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $5 - 3i$ and $-9 - 2i$ in standard form $(a + bi)$.**

Solution

$$(5 - 3i) \cdot (-9 - 2i)$$

$$-45 - 10i + 27i + 6i^2$$

$$-45 - 10i + 27i - 6$$

$$-45 - 6 - 10i + 27i$$

$$-51 + 17i$$

Polynomial Factoring solution (version 654)

3. **Write function $f(x) = x^3 + 12x^2 + 47x + 60$ in factored form. I'll give you a hint: one factor is $(x + 5)$.**

Solution

	1	12	47	60
-5		-5	-35	-60
	1	7	12	0

$$f(x) = (x+5)(x^2+7x+12)$$

$$f(x) = (x+5)(x+4)(x+3)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+4)\cdot(x-1)^2\cdot(x-5)$$

Sketch a graph of polynomial $y = p(x)$.